

**Homeland Security Standard Panel (ANSI-HSSP)  
November 9, 2011**

***Standards Development in Response to Terrorism Threats***

**[NIOSH and NFPA CBRN  
Personal Protective Equipment \(PPE\) Standards](#)**

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***Chair – NFPA Technical Correlating Committee on Fire and  
Emergency Services Protective Clothing and Equipment  
InterAgency Board (IAB) – Federal Co-Chair Equipment Subgroup***

# ***NIOSH-DOD-OSHA Chemical and Biological Respiratory Protection Workshop Report (March 1999 – Before 9/11)***

## **Identified Immediate Responder Needs Including:**

- **NIOSH certification of SCBA, APR, PAPR against CB threats**
- **Assurance that SCBA will survive an exposure to chemical warfare agents**
- **Training assistance with PPE and respirator selection**
- **Identification of appropriate cartridge/canister performance tests for air-purifying respirators**

# Chemical, Biological, Radiological and Nuclear (CBRN) Respirator Standards Development

- **Workshops/Committee Meetings**
  - **NIOSH-DOD-OSHA Chemical-Biological Respiratory Workshop & Report (March 1999)**
  - **Interagency Board Standards & PPE Committees**
- **Initial and Continuing Funding DHS**
- **Cooperation among NIST, RDECOM, OSHA, NIOSH, NFPA, and DHS**
- **Define Collaboration for CBRN Standards Development**
- **IAA's with NIST and RDECOM**
- **RDECOM Technical Support for Testing**



# **NIOSH CBRN Respirator Standards Program**

## **Approved Standards**

**Self-Contained Breathing Apparatus (SCBA) with CBRN Protection**  
*(December 2001) – SCBA Upgrade March 2003*



**Air-Purifying Respirator (APR) with CBRN Protection**  
*(April 2003)*



**Air-Purifying Escape Respirator (APER) with CBRN Protection**  
*(September 2003)*



**Powered Air-Purifying Respirator (PAPR) with CBRN Protection**  
*(October 2006)*



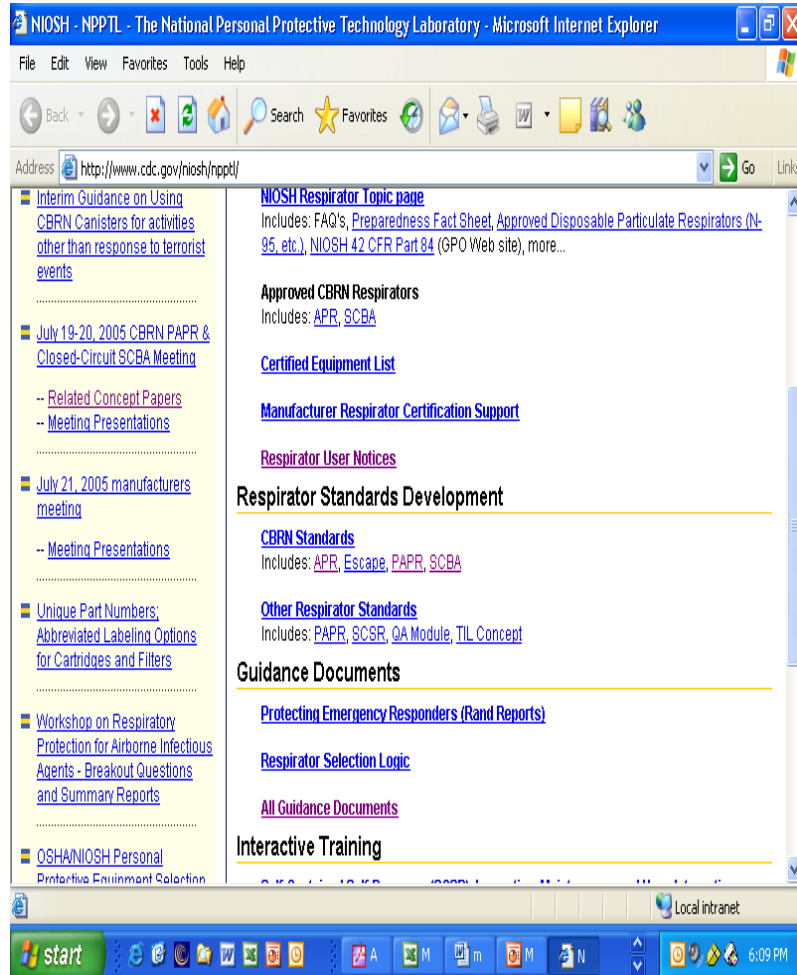
## **Under Development**

**Closed-Circuit Self-Contained Breathing Apparatus with CBRN Protection**

**CBRN Combination Respirator (SCBA/APR & SCBA/PAPR)**

# NIOSH NPPTL Resources

## <http://www.cdc.gov/niosh/npptl>



- Certified Equipment List – (searchable)
- Respirator Topic Page
- Approved CBRN Respirators
- Standard Test Procedures
- Standards Development including CBRN

# ***NFPA Project on Fire and Emergency Services Protective Clothing and Equipment (FAE-AAC)***

**Technical Correlating Committee (TCC) and Seven (7) Technical Committees**

**Two Types of Documents:**

- (1) Design, Performance, Testing, and Certification Standards Documents***
- (2) Selection, Care, and Maintenance Documents***

- Hazardous Materials Protective Clothing and Equipment (FAE-HAZ)**
- Respiratory Protective Equipment (FAE-RPE)**
- Special Operations Protective Clothing and Equipment (FAE-SCE)**
- Structural and Proximity Fire Fighting Protective Clothing and Equipment (FAE-SPF)**
- Emergency Medical Services Protective Clothing and Equipment (FAE-EMS)**
- Wildland Fire Fighting Protective Clothing and Equipment (FAE-WFF)**
- Electronic Safety Equipment (FAE-ELS)**

***NIOSH & NFPA Partnership Defined by MOU***



# ***NFPA Protective Clothing and Equipment Standards – CBRN***



1991 Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies, 2005 Edition

1992 Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies, 2005 Edition (*does not include CWA's*)

1994 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents, 2007 Edition (*Three Classes of Protection 2, 3 & 4*)

***Note: 1994 Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents, 2001 Edition***

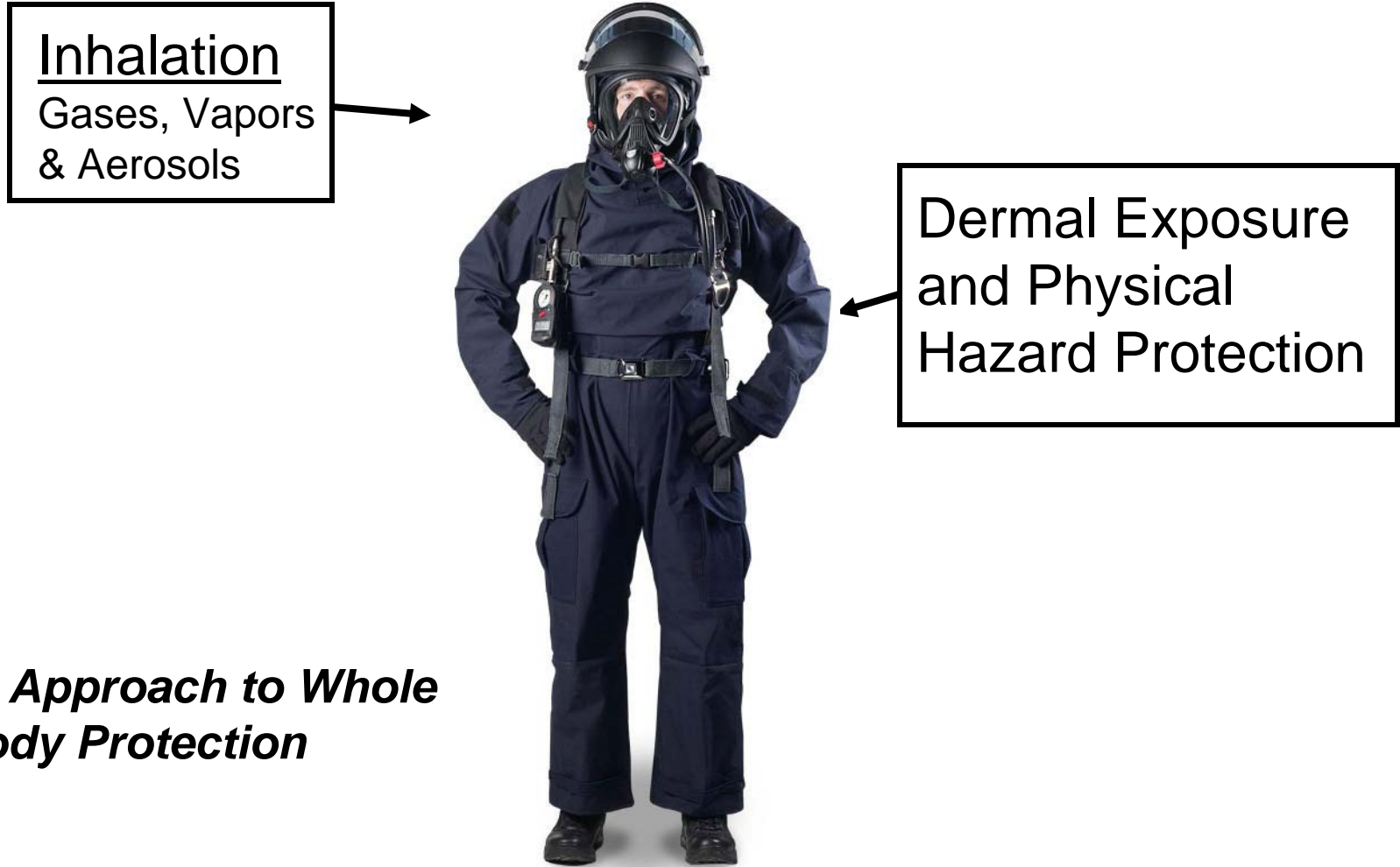
1971 Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition (*CBRN Ensemble – NFPA 1994 Class 2 Performance*)

1951 Standard on Protective Ensembles for Technical Rescue Operations, 2007 Edition (*CBRN Technical Rescue Ensemble – NFPA 1994 Class 3 Performance*)

1999 Standard on Protective Clothing for Emergency Medical Operations, 2008 Edition ( [C]BRN Protective Ensemble Requirements)

# *Personal Protective Equipment – Work as a System to Provide Inhalation and Dermal Protection (masks, garments, gloves & boots)*

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***Systems Approach to Whole  
Body Protection***



# Systems Approach to PPE

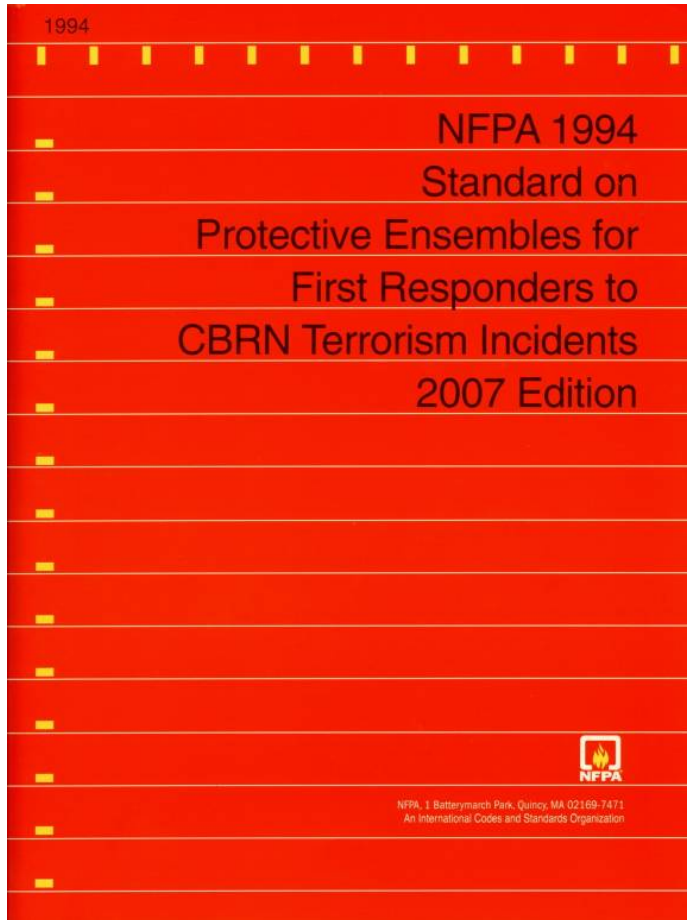


- NFPA 1994 Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents, 2007 Edition  
*(Class 2, 3 & 4 CBRN Protective Ensemble Requirements)*
- NFPA 1951 Standard on Protective Ensembles for Technical Rescue Operations, 2007 Edition  
*(CBRN Technical Rescue Protective Ensemble Requirements)*
- NFPA 1971 Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition  
*(CBRN Structural and Proximity Protective Ensemble Requirements)*

All respirators specified by the ensemble manufacturer for use with these CBRN protective ensembles shall be certified by NIOSH as compliant to the CBRN SCBA, APR and PAPR federal standards

# NFPA 1994 History

## First Responder CBRN PPE



- Developed by NFPA Technical Committee on Hazardous Materials Protective Clothing and Equipment
- Initial work began 1997
- First edition released in May 2001
- Second edition effective in February 2007

# NFPA 1994-2007 Edition Ensemble Classes



Performance Evaluation	Class		
	2 (SCBA)	3 (APR)	4 (BRN)
Vapor-integrity test	MIST > 360	MIST > 60	None
Liquid-integrity test	20-minute	4-minute	4-minute
Particle-integrity test	None	None	No detection
Chemical barrier test	390 ppm gas Closed top	40 ppm gas Open top	None
Bio-barrier test	Viral penetration	Viral penetration	Viral penetration

# NFPA 1981 – 2007 Edition Changes



- Mandatory NIOSH CBRN approval
- Air cylinder retention
- Mechanical voice diaphragm performance
- Independent pressure gauge
- Heat exposure/water immersion (to evaluate electronics)
- Low power capacity



**NIJ CBRN Protective Ensemble Standard for Law Enforcement**  
**NIJ Standard – 0116.00**  
**November 2010**

**Law enforcement response levels (LERLs):** Classification of CBRN protective ensembles based on mission requirements, expected mission duration, durability requirements of different operations and activities, and hazards in the CBRN threat environment. There are four LERLs: LERL-1, LERL-2, LERL-3, and LERL-4.

**Respiratory Protection:** Equipment intended to cover at least the eyes, nose and mouth to protect the respiratory system and eyes from harmful particulates, vapors and gases.

# NIJ CBRN Protective Ensemble Standard for Law Enforcement NIJ Standard – 0116.00

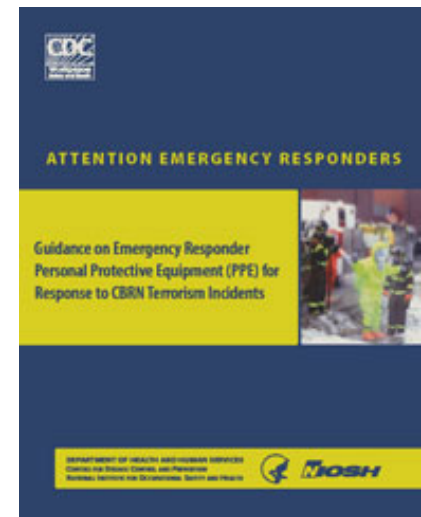
## Chapter 4 – Form and Fit Requirements

4.1.8 - All models of respiratory protection specified by the manufacturer for use with LERL-1, LERL-2, LERL-3, and LERL-4 CBRN protective ensembles shall be certified by NIOSH as approved to the performance requirements of the *NIOSH Statement of Standard for CBRN SCBA*, the *NIOSH Statement of Standard for CBRN APR*, or the *NIOSH Statement of Standard for CBRN PAPR*. A Respiratory protection that performs in multiple modes corresponding to various respiratory protection types, such as a combination SCBA and APR or combination SCBA and PAPR, must be certified by NIOSH as compliant in accordance with 42 C.F.R. Part 84.

# **PPE Guidance and Selection**

ATTENTION EMERGENCY RESPONDERS -  
Guidance on Emergency Responder Personal Protective  
Equipment (PPE) for Response to CBRN Terrorism Incidents  
DHHS (NIOSH) Publication No. 2008-132

<http://www.cdc.gov/niosh/docs/2008-132/>



Recommendations for the Selection and Use of Respirators  
and Protective Clothing for Protection Against Biological Agents  
NIOSH Publication No. 2009-132

<http://www.cdc.gov/niosh/docs/2009-132/>

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